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MOUNTAIN PINE BEETLE CONTROL PROJECT

TETON NATIONAL FOREST

May 14 to July 19, 1947

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W. B. RICE, Regional Forester:

Submitted herewith is a report on the spring Mountain Pine Beetle Control Project on the Teton National Forest and Teton National Park.

This report is to show how the Forest Service went about the co-operative undertaking of a large bark beetle control project -- problems encountered, how they were met, and some of the things we learned by which we may profit.

No mention is made of land classification, but the infestation (respecting no man-made boundaries, as usual) occurred on both private and Government lands. Clearance was obtained in every case before control work was done on private lands.

No map is included because the status of the infestation will be changing as fall control progresses.

The report has been written for some time, but has been held up until a final analysis of the costs could be obtained.

Respectfully submitted,

Lowell J. Farmer

LOWELL J. FARMER, Forester

MOUNTAIN PINE BEETLE CONTROL PROJECT

TETON NATIONAL FOREST

May 14 to July 19, 1947

Summary:

Teton Project:

Total infested trees treated	22,032
Total effective man-days treating	5,519
Trees per treating man-days	4.0
Total camp man-days	9,159
Trees per total man-day expended	2.4
Total cost of project	$ 136,657.36
Average cost per infested tree treated	$ 6.20

Fall Creek Camp: 5/14 to 6/20 inclusive

Total infested trees treated	10,143
Total effective man-days treating	2,447
Trees per treating man-day	4.15
Total camp man-days	4,216
Trees per total man-day expended	2.4

Mosquito Creek Camp: 5/17 to 7/19 inclusive

Total infested trees treated	10,353
Total effective man-days treating	2,565
Trees per treating man-day	4.05
Total camp man-days	3,734
Trees per total man-day expended	2.78

Teton Park Camp: 5/24 to 6/28 inclusive.

Total infested trees treated	1,536
Total effective man-days treating	507
Trees per treating man-day	3.03
Total camp man-days	1,200
Trees per total man-day expended	1.3

SUMMARY OF FINDINGS AND POINTS SUGGESTED FOR IMPROVEMENT:

1. Mexicans are good, steady, hard workers and extremely well adapted to this type of work.

2. A pay system for our work camps to pay off regularly in person would ease the difficulty of obtaining and keeping labor and make it possible to obtain a better class of labor. In other words, we would be on a favorable competitive basis with industry in the labor market.

3. When a project begins more good planning is needed regarding the type of equipment that will be used on the job, and where it can be obtained.

4. Power saws for felling trees is not recommended unless considerable time and expense are devoted to training saw teams.

5. The sprinkler can illustrated in the picture section is recommended for future projects of this type.

6. A planned program of entertainment and recreation, particularly in Mexican camps, would be worthwhile.

7. An arrangement whereby we could assign overhead rates of pay to Mexicans obtained through the Agricultural Production and Marketing Administration would be extremely helpful in conducting a large work project.

8. Workers should be trained from the beginning to recognize the end of the infestation in the tree by borings rather than by blue stain.

9. Contract treating was found to be not only cheaper than Government treating in this area but desirable because the problems of camp and work organization are passed on to the contractor. It is recommended that contract treating under Government supervision be expanded to the limit desirable under existing local conditions.

10. Workers complied generally with the safety regulations, but the safety program was more effective after the work organization became more tightly knit.

    Hard hats were worn by fallers.

    We recommend that special clothes and shoes be purchased by the Government and provided for the oilers. The clothing should be of the processed waterproof type (not rubber or rubberized), and the shoes of heavy leather with nonskid soles.

Organization:

Early in February, plans for this, and a companion mountain pine beetle control project on the Targhee National Forest, were drawn by the Forest Service, Park Service, and Bureau of Entomology personnel. Investigations on the availability of equipment, supplies and labor were begun immediately by the Regional Forest Office. Forest organization plans were complete, men to be detailed to the project, and supplies and equipment were all ready to be funneled to the job when word was received on May 5 that Congress had made $282,500 of project funds available to the Region. These funds were divided between the Teton and Targhee evenly, with the Teton to administer expenditures on the Teton National Park infestation.

Construction of the Fall Creek and Mosquito Creek camps, both planned for 100-man camps, and the Teton Park Camp, a 30-man camp, was begun May 6. All were ready for occupancy May 15 and had been almost fully manned by that date.

The overhead personnel organization included a project manager, an assistant project manager - who acted mostly in a training capacity, and a project safety and welfare officer. Clerical work and over-all supervision were handled by the Teton Supervisor and his staff with extra clerical help detailed from other forests and from the Regional Office.

The 100-man camps had a camp superintendent, a camp boss, tool dresser, mechanic, one first and two second cooks, and four to six woods foremen depending on the number of men available for woods work, and truck drivers and teamsters as needed. One cat operator served both camps for road maintenance and road pioneering into control areas. The Teton Park 30-man camp had a project supervisor, timekeeper, tool dresser, two cooks and three foremen in the overhead setup.

Each camp had a spotting crew attached with a chief spotter compass man and 2 to 4 spotters as needed.

Personnel:

General project personnel assigned to the job were Arthur Potter, project manager; Lowell Farmer, assistant project manager; and Wendell Moran, welfare and safety officer. Camp overhead was as follows:

Teton Park - 30-man camp. June 30

Camp Superintendent	Elliot Davis	Park Service
Camp Boss	Joseph Fraser	Park Service

Foreman	Richard Lambert	
	Barry Hewlett	
	Odin Hofland	
Cooks	Mr. & Mrs. Patterson	
Chief spotter	Blake VandeWater	
Tool dresser	William Schneiter	

Fall Creek - May 14 to June 21

Camp Superintendent	Kenneth Call	Salmon N. F.
Camp Boss	Horace Ralph	R. O.
Foremen	Roy Eaton	Boise, N. F.
	William Brown	Payette N. F.
	Elmer Jones	Payette N. F.
	William Davis	Payette N. F.
	Donald Rhoades	
Chief Cook	Everette Hall	
Chief Spotter	Robert Newcomer	Boise N. F.
Tool dresser	Mike Zubal	

Mosquito Creek - May 14 to July 19

Camp Superintendent	Joseph Ladle	Boise N. F. 5/19-6/24
	Lowell Farmer	R. O. 6/24-7/19
Camp Boss	William Price	Nevada N.F. 5/14-6/16
	Wendell Moran	6/16-7/21
Foremen	Robert Chenoweth	Boise N. F. 5/14-6/26
	Guy Sutton	5/14-6/21
	Jesse James	5/14-6/18
	Ed Wenzel	5/14-7/19
	William Adams	6/12-7/1
	Odin Hofland	7/1-7/12
	Fred Shirley	7/14-7/19
	William Breen	6/30-7/12
	Herbert Steingraber	6/30-7/12
	Arthur Kappelman	6/30-7/19
	Roy Eaton	6/24-7/19
	Adrian Robinson	6/30-7/19
Chief cook	L. Alvin Johnson	5/14-7/19
Tool dresser	William Schneiter	6/30-7/19
	Mike Zubal	6/30-7/19
Chief spotters	Simon Cuskelly	Salmon N.F. 5/14-6/26
	Stanley Rhoades	6/27-7/19

The Fall Creek camp used Mexican National laborers entirely. The project received 100 Mexicans from the Department of Agriculture Production and Marketing Administration upon arrangement by the Regional office of Timber Management. They were on the project for six weeks of work, and proved to be good, steady, hard, willing workers. The language proved some barrier to the foremen early in the project but they soon learned enough Spanish to convey their desires and work progressed smoothly.

There was no labor and very little other personnel turnover at the Fall Creek camp so this did not constitute a problem.

Except for some local foremen, turnover at the Mosquito and Teton Park camps was almost continuous. At the end of the project three men had been hired for every man on the job. Week ends and holidays proved the most serious setbacks to production and in one instance nearly half the laboring personnel were lost. New recruitments were made from tributary employment offices, laboring men's hangouts, and from transients, miners, transient laborers, and students furnished the bulk of the working personnel.

By far the biggest personnel problem we had was in connection with pay. If the Government can develop a pay system for these camps so the men can get paid on pay day, we will get rid of a lot of headaches. As it is, we are in no position to compete with industry and can never attract the better class of laboring man.

A commissary was required at the Mexican camp and the camp boss made a weekly trip to Idaho Falls for this purpose. No commissary was handled at the other two camps although a small one would have been of some help at Mosquito Creek. Tobacco and clothing were the most popular commissary items among the Mexicans. Many of the Mexicans arrived here with poor quality clothing, especially for woods work and wet weather. Footwear was especially poor for woods work. Most of them were wearing "guarachis" (sandals) with no sox. Their feet were very tough. "Tengo bastante tos" (colds) were very prevalent among them during the rainy season.

T. T. Terrell was assigned by the Bureau of Entomology as Technical Advisor on both the Teton and Targhee projects. He will follow up on the survey and control projects for their duration. He is also conducting an experimental airplane DDT spraying project on 500 acres of beetle infested lodgepole pine. This project, which will be carried out in two applications of spray, will require all of his and Robert Newcomer's time until the surveys begin about August 15.

Equipment and Supplies:

Because of the rapidity with which it was necessary to bring this organization together, some shortages developed which held back production. Items most difficult to obtain were orthodichlorobenzine, spray cans, and peavies. However, these shortages were mostly remedied within the first ten days of the project so treating proceeded uninterrupted.

Several varieties of pressure spray guns were tried out early in the project. It was found that the rubber gaskets and hoses would not withstand the action of the mix and soon disintegrated. This coupled with the fact that pressure streams are not entirely satisfactory from an application standpoint, led us to replace pressure with sprinkling cans as fast as they became available. The 2-gallon sprinkler can finally settled on as most satisfactory is simple, effective, and practically fool-proof. Cans and nozzles of the type illustrated were the most satisfactory on the project. Two rows of holes gave the most effective treating stream.

Power saws, both one and two-man, were tried out but were put aside in favor of the two-man crosscut saws which serve the purpose better for untrained labor and are faster. We concluded that power saw equipment requires highly skilled operators who have had special training. For ordinary run-of-the-mill labor, two-man crosscut saws are faster and safer.

One shipment of orthodichlorobenzine contained considerable impurities and precipitate. Much of the precipitate (white naphthalene-like crystals) went back into solution when the barrels were turned in the sun. The darker, more impure chemical killed the bugs just as effectively as the purer grades. However, we had some trouble with it clogging the sprinkler heads.

A chemical mixing plant to supply the entire project was set up at the Mosquito Creek camp. Three 500 gallon tanks were used, one to receive diesel oil and two to mix. A mercury pump proved very satisfactory to pump ortho and oil into the mixing tanks and draw it off into barrels for delivery on the job. The mix disintegrated the rubber gaskets in the pump and they had to be replaced with gaskets made from sheet cork. A meter (neptune) was installed at the pump outlet to check the amount of oil or ortho going into the mix.

The 6 to 1 mix recommended by the Bureau of Entomology was very effective on the beetles. Six parts of diesel fuel oil and one part of ortho were put in the mixing tanks, ortho first, and the pump was used to circulate the mixture. The usual mix was 55 gallons of ortho and 330 gallons of diesel in each tank. This same plant was used to mix the DDT for the airplane spraying job.

A daily delivery truck from the Jackson warehouse kept the camps supplied.

Camps:

Considerably higher type camps were constructed for this insect control project than for any previous ones in this Region. Cook shacks were lumber framework and floors with screening and canvas covering. Sleeping tents were 14 x 16 on frames and wooden floors. Each camp had an electric power plant and shower house. Toilets were well constructed, lumber framework and floors and tent covers. A bull cook in each camp kept everything clean and sanitary with liberal applications of chlorinated lime, DDT, lye and water. These were high standard camps, built and managed in an orderly way. They paid off in satisfied men and effective work.

The Fall Creek and Teton Park camps were dismantled at the close of their work. The lumber was salvaged and is available for further use. The Mosquito Creek camp will remain " in situ" for further control headquarters. The mess hall will seat 120 men and there is tent space for 115.

All camp equipment was obtained in 33-man "Blister Rust Control" units from Region 1 at a $750 per unit rental rate. These will be returned to Missoula at the completion of the Teton projects.

Some sporting equipment was made available to the camps although no attempt was made at organized recreation. Forest personnel showed "Service" pictures at the camps on several different occasions. For the most part, the men were left to entertain themselves. Some entertainment to break the monotony of the job and the routine of ordinary camp life proved worth while.

Transportation and Road Building:

Several trucks and weapons carriers were made available to the project for transporting men and supplies. The stake trucks used for transporting men to the job were equipped with seats and tool boxes in conformity with the project safety plan. Earlier in the job automotive equipment suffered from lack of proper care, particularly at the Mosquito Creek camp where no definite authority to handle this phase of the work was delegated. The Fall Creek camp had a Mexican mechanic who serviced the motor equipment daily and kept it greased and in serviceable condition.

We can sing the praises of the 4 x 4 weapons carrier for this kind of work neither too loud nor too long. For transporting oil and men in the timber off-travelled roads and in mud, these sturdy vehicles performed beautifully. During the rainy period the job would have been stymied more than once but for this equipment. Their winching apparatus is extremely useful for pulling stalled trucks out of holes and jerking down lodged trees.

One RD-6 Cat equipped with overhead guard against falling timber did by-pass clearing and some road dozing for the two large camps. By and large the by-pass clearing which opened up the timber to trucks and jeeps paid for itself in time saved and extra trees treated. However, the Cat had been condemned before it was sent on the job and required more than an ordinary amount of fixing. We should put more reliable equipment on these jobs to save money and increase production. One time the track came off the Cat. This cost us 150 trees production because we could not get oil up to the job.

Infestation:

There is no question but that this is a local infestation which has built up tremendously within the last two years. The mountain pine beetle has shown before its ability to multiply into extreme epidemic form in a relatively short time.

The heavy infestations are from the junction of Fall Creek and the Snake River north on the west side of the Snake to Phillip's Canyon. Farther north on Teton National Park they were much less intense - - averaging less than one infested tree per acre, but just as virulent.

Many of the new attacks on the Teton Park came from untreated windfalls and trees missed in the last control job. We believe control obtained this year was complete enough so that any out-of-the-ordinary reinfestations will have their source elsewhere than in the controlled areas.

With the time and funds available, we were unable to complete the job which will probably require the continuing of preliminary control as well as maintenance control on areas treated this year. Treating was completed from Phillip's Canyon south to Schofield draw on the forest and north to Jenny Lake by the Park Service camp. On the east side of the Snake, two spot infestations were picked up - one on the top of Snow King Hill and another in Game Creek.

There were some beetle flights as early as June 14 (first observed) but very little in quantity until after July 15. Parasites, both hymenopterous and dipterous, seemed about of average intensity in trees examined. Beetle broods were healthy and natural mortality was no more than average. We can expect heavy emergence and heavy reattacks this year.

Fall surveys which will be conducted under the supervision of Tom Terrell of the Bureau of Entomology and Plant Quarantine, should cover the entire infested area including Mosquito Creek and type running toward the Targhee divide. A good sound estimate of further work to be done and the new status of the infestation should be obtained.

For the most part, the infestation has confined itself to mature timber removing nearly 100 percent of it in some areas. A few spots were found where younger trees down as low as 5 inches in diameter had been successfully attacked.

During the last few days of the operation, there had been a few emergences and hits but in most trees the new brood of mature beetles had congregated in pockets and were milling around beneath the bark. This indicates that we will have major flights beginning about the time of the airplane spray project July 21.

It is quite apparent that the farther south we can push the infestations, the less threat they will present to the lodgepole pine in the Teton National Park. These infestations "leapfrog" rather than spread by transmigration. Thus the strategy developed early in the project was to get control from the head at Jenny Lake as far south as possible with the time and money available. This has been accomplished to Schofield Draw as shown on the project map. Terrell and I believe there were close to 100,000 infested trees on the forest including back areas and others on the east side of the Snake not included in the original estimate. The future strategy should be, provided the airplane spraying proves ineffective, to hold the ground already gained and then work farther south as time and funds permit.

The Mosquito Creek camp is ideally located for this work and should be left intact.

Treating:

A long siege of rainy weather about the time the camps moved in inhibited treating operations to an appreciable extent. However, treating was started by the Mexicans May 14 and at the Mosquito and Park camps May 17 and 26 respectively. The Mexicans peeled, and some burning was done at Mosquito Creek, but the large bulk of the treating was done with mix.

The tree per man-day output rose as the weather became drier and thus favorable to oiling. Oil cannot be applied to wet logs and successful control obtained.

Shortage of capable trained foremen and good strawboss material during the early part of the project and until the men could be sized up and assignments made cost some loss of time and output by overloading the available foremen. Possibly it would be well to mention here that some regulation prevented us from assigning overhead rates to qualified Mexicans. Although we had them working as strawbosses, mechanics, cooks, etc. we were allowed to pay them only at the laborer's rate. This created an administrative problem rather difficult to handle and it really amounted to an imposition on their good will. These men were highly skilled in a variety of trades and some of them were excellent administrators.

With the size of the training job we had and the few foremen, it was necessary to put too many men in a crew to get the most efficient job done. On this job, from an efficient treating and a safety standpoint, no foreman should have more than nine men, i.e. three - three-man crews. When we got our crews worked down to that size we began to get efficient safe production.

The crew unit found most effective was three men - two timber men and an oiler. Three such crews worked safely, efficiently, and consistently well under one foreman. One man on each three-man crew can be a working strawboss. This depends on the quality of the men. An important aspect of the three-man crew which treats each tree as it is felled, is the fact that the job is completed every day. This is especially desirable during rainy weather when oiling may be held up at any time.

The most important phase of treating was the training which mounted into a considerable job with men continually leaving and new ones arriving. The act of oiling a tree, for example, appears to be quite simple but it requires a special technique which must be carefully developed. The tendency is to get sloppy rather than better and for this reason foremen and others must continually check the work of each crew. It is most difficult to impress these points on the oilers:

1. Oil only the top of the log, never the side.
2. Roll the log four or five times, or whatever is necessary. Oil applied on the sides runs off and is not effective in killing the bugs.
3. Apply a slow, even flowing stream once across. It is not necessary to play the stream back and forth.

4. Leave no dry spots. The oil works straight in and kills only the insects directly beneath it. Those under dry spots will escape.

After treating had progressed for a couple of weeks we found that the bugs in the stumps were not being killed. Thereafter all stumps were scored with light ax strokes by the fallers. Scorings were 2 to 4 inches apart up and down and around the stump. All unscored stumps were scored and oiled again.. All beetles in scored stumps were killed.

We found that the temperature has considerable effect on the length of time it takes for the mix to reach and kill the brood. During cool wet weather ten days or more were required. In direct warm sunlight, the broods succumb the same day the logs are oiled.

For the first half of the project the guide used to show the fallers where to cut off the infested portion of the tree was at the blue stain. However, later in the project when the secondary bark beetles,mainly Ips species, began filling in above the mountain pine beetle broods, blue stain was also produced as a result of their work. It, therefore, became necessary to retrain the crews to recognize the last beetle attack and use this as a guide to sever the infected portion of the tree. From now on we should train the crews to recognize the last beetle attacks in the upper portion of the bole. This will save retraining when the engraver beetle blue stain appears.

With the exception of two isolated patches, all areas treated were spotted by a trained spotting crew and the treating crews were assigned strips with lists of the tree numbers on the strip. This avoids confusion on any area no matter how thick the trees may be. It is the recommended practice on all bark beetle control jobs of project size.

The practice followed was to have the Chief Spotter supply the crew foremen with lists showing strip numbers and numbered trees. In areas where infested trees were scattered the locations of the individual spotted trees were plotted and the treating foreman supplied with a map. The foreman then checked off each tree as it was treated and returned the list to the file when all the trees had been checked off. The Chief Spotter plotted the strips run on a project map (4" scale) and as the strips were treated they were filled in on the map in red to show the exact status of the job at all times of both areas treated and those remaining to be treated.

Weapons carriers were used to get the men onto the job and supply oil at central spots. From these supply stations teams and "boats" were used to scatter drums of oil to the treating crews. A considerable number of barrel bungs or plugs were lost and it is advisable to have the bungs chained to the barrels to prevent this loss.

By opening roads with the Cat and taking weapons carriers in, it was seldom necessary for any man to walk more than one or two hundred yards to the job.

We had a considerable number of lost tools until the practice of checking tools to foremen both in and out was begun.

Acreages treated were as follows:

Fall Creek Camp - 479 acres - 21.2 infested trees per acre.
Mosquito Creek Camp - 1400 acres - 7.4 trees per acre.
Teton Park Camp - 1650 acres (est.) - 0.93 trees per acre.

Spotting:

Each camp began operations with a six-man spotting crew following the recommendations of Mr. Terrell and the procedure set up by James C. Evenden's "Instructions for Spotters in Bark Beetle Control."

In the heavier concentrated areas of infestation (25 or more trees per acre) it was soon found that a four-man crew (2 men on strips) could work just as effectively and supply sufficient spotted trees for a hundred-man camp which averaged 75 to 80 workers in the field. This was true at the Fall Creek camp. At the Mosquito Creek and Teton Park camps where trees averaged less than 10 per acre, the full six-man crew (4 men on strip) was needed to keep ahead of the treating crews.

Each evening the chief spotter checked off trees treated during the day and furnished copies of strips and spotted tree records to the foremen as needed. He also plotted strips run during the day on the project map and filled in areas on which treating had been completed.

The Teton Park spotting crew followed string lines previously laid out by a compass man and string man. For marking infested trees they used bands of orange colored cloth to which tags with the tree numbers were fastened. These, it was found, had to be put up out of reach of deer or elk. The other spotting crews used the conventional method of blazing the infested trees on two sides and numbering one blaze with black lumber crayon. When the tree was felled the fallers put the tree number on the stump. The treating foreman placed a "T" on the stump when recording the number of the tree as treated. The Park foremen simply turned in the tags from the treated trees.

Training of the spotters is very important to a good clean job. Probably a week's time was spent with each crew before they obtained the desired proficiency.

Contract Treating:

To find the relative costs between contract and government treating a contract was let for a small infested area on the Phillip's Canyon ridge. Bid contracts were delivered to eight interested persons and two bids were received, one for $3.50 per tree and one for $6.50. The Government supplied the oil, supervision and checking, and spotted the trees.

Cost per tree on this area was:

113 trees @ $3.50	$395.50	
175 Gallons of mix @ 0.275	48.12	(ortho 10½¢ per lb.
Spotting	57.14	diesel 13¢ gal.)
Checking & Instruction	15.00	
Total cost	$ 515.76	
Cost per tree for 113 trees	$ 4.55	

The contractor, A. R. Kile of Jackson, Wyoming, and one other man completed the contract within the two weeks' time and did a good job oiling. Contract treating can be let cheaper than this in more accessible areas. Also the larger the number of trees, the less would be the cost of spotting and checking. We believe contract treating has wide possibilities in insect control work.

Safety:

A safety plan, a copy of which is attached to this report, was drawn up at the sectional meeting of Forest Safety Officers at St. Anthony, May 8 and 9. The precautions outlined in this plan were followed quite closely in all three phases of the project.

The Fall Creek camp had the best safety record, there being only one lost time accident for 4,216 camp-man days. The Mexicans are naturally extremely safe workers and this accident was more or less of a freak in which a tree felled a considerable distance from the worker who was oiling a tree, hit another dead tree which, in falling, knocked over a small tree, the top of which came down dealing the oiler a severe blow across the hands. This was more or less of a chain reaction which originated at a safe distance. Other than this, there were some scratches and a few cuts such as are usually incurred on timbering jobs. The workers were protected from oil by canvas and oilcloth wrappings around their legs and backs. Nevertheless, there was some burning from oil, none of which proved serious. The mix makes characteristic small blisters over the skin which closely resembles a case of chicken pox.

There was one case of mumps in camp, and considerable discomfort due to colds, but all were medicated promptly and thoroughly and there were no serious losses of time. A nurse employed by the Agriculture Production and Marketing Administration visited camp every week.

The Mosquito Creek and Park Camps were a different story and although there were no serious accidents, there was for the first five or six weeks of the project an almost continuous stream of petty ax and saw cuts to the local doctor, about half of which caused lost time. The problem was attacked by the Project Safety Officer and the camp overhead but little improvement was made until a general shakedown in which crews

were reorganized and made smaller and the number of foremen was increased. For the last part of the project, lost time accidents were practically eliminated due to closer and better supervision and more attention to safety throughout the organization.

I believe one other reason for the series of accidents was the proximity of the camp to Wilson and Jackson. A large number of the men made nightly trips and lost a lot of sleep with the result that their alertness and efficiency were impaired. Handling cutting tools under these conditions is dynamite.

Records:

Spotting

Total man-day spotting

Fall Creek		125.5
Park		200.0
Mosquito Creek		250.0
	Total	575.5

Acreage spotted

Fall Creek		434.3
Park		1650.0
Mosquito Creek		1352.3
	Total	3436.6

Acreage spotted per man-day

Fall Creek		3.46
Park		8.25
Mosquito Creek		5.42
	Average for project	5.95

Trees spotted per man-day

Fall Creek, 9.603		76.5
Park, 1,649		8.25
Mosquito Creek, 9,385		37.5
	Average for project	35.8

Treating:

Infested Trees treated

Fall Creek	10,143
Park	1,536
Mosquito Creek	10,353

Acreage Treated:

Fall Creek	479
Park	1650
Mosquito Creek	1400
Total	3529

Infested Trees per acre treated:

Fall Creek	21.2
Park	0.93
Mosquito Creek	7.40

Man-Days Treating

Fall Creek	2,447
Park	507
Mosquito	2,565
Total	5,519

Average Trees per Man-day treating

Fall Creek	4.15
Park	3.03
Mosquito Creek	4.05
Average for project	4.00

Total camp man-days

Fall Creek	4,216
Park	1,200
Mosquito Creek	3,743
Total for project	9,159

Average trees per camp man-days

Fall Creek	2.4
Park	1.3
Mosquito Creek	2.78
Average	2.4

Horse-days used

Fall Creek	102
Mosquito Creek	172
Total	274

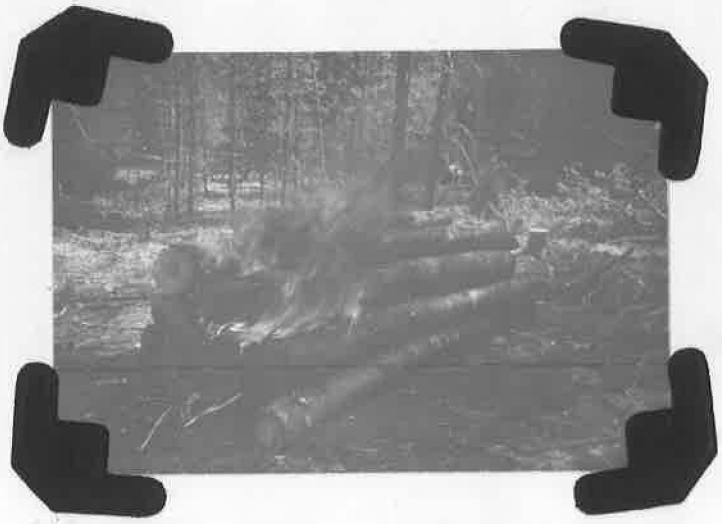
SUMMARY OF INJURIES ON INSECT CONTROL PROJECT

NAME	AGE	DATE OF INJURY	HOSPITALIZED	CAMP	FOREMAN	NATURE & CAUSE OF INJURY INVOLVED	LOST TIME
Cecil L. Barzee	19	10 a.m. 6/7/47	No	Park	Hofland	Handing saw by cutting edge, slipped and cut index finger.	No
Cecil L. Barzee	19	2 p.m. 6/7/47	No	"	"	Kneeling while sawing, cut 3/4 inch gash on left knee	No
Leonard L. Browning	27	10 a.m. 5/26/47	Yes	Mosq.	Chenoweth	Using axe as wedge, deep cut in left cheek	No
Wilford M. Hammon	20	11 a.m. 5/22/47	"	Park	Barney	Holding log with foot, cut big toe and foot.	No
Ray N. Holm	19	2 p.m. 6/7/47	No	"	Hofland	Removing saw, puncture left knee	1 day
Dean C. Ivie	18	11:45 a.m. 6/2/47	Yes	Mosq.	Sutton	Sharpening axe, infection forefinger right hand	9 days
Dan A. Kofford	18	2:15 p.m. 5/28/47	No	"	James	Stepped on axe blade, cut toe	No
Cyril N. Lauritzen	18	11 a.m. 6/6/47	No	"	Sutton	Axe caught on twig, cut right shin	No
Robert Loveland	26	10:30 a.m. 6/20/47	No	"	Adams	Fell on log, sprained finger right hand	No
Robert Loveland	26	11:30 a.m. 6/24/47	No	"	Wenzel	Chopping stump, axe caught on splint on finger, cut right leg	2 days
Joseph A. Nebeker	18	11:30 a.m. 5/19/47	Yes	"	Sutton	Walking on log, slipped saw cut neck	No
Ivan D. Penner	25	3 p.m. 5/21/47	No	"	Sutton	Cutting sappling, flew back and cut forehead	No
J. Warnel Potter	18	2 p.m. 5/21/47	Yes	"	Wenzel	Bronchitis	5 days
William L. Price	30	6/5/47	Yes	"		Throat Infection	5 days
Robert E. Smith	37	3 p.m. 5/19/47	No	"	Johnson	Washing dishes, cut right palm	No
Edward C. Wenzel	37	11:30 6/5/47	Yes	"	Ladle	Axe glanced, cut left leg	18 days
H. R. Wilding	18	6/4/47	Yes	"	Chenoweth	Fell cut hand, blood poison	4 days
Woolf, Lowell H.	52	4 p.m. 5/30/47	No	"	Sutton	Slipped with 5 gal. can of oil, Rupture	Did not return
Monty D. Young	19	6/10/47	Yes	"	Chenoweth	Driving axe in stump, glanced cut leg	1 day
(non-reportable accidents (not involving loss of time or medical expense) not listed above)							
Thomas Allen	23	7/11/47	No	Mosq.	Robinson	Left forearm struck on axe blade	No
Joseph A. Keele	19	7/2/47	No	"	Hofland	Saw cut on knee, right	No
Paul L. Wilkin	20	7/11/47	No	"	Eaton	Axe cut on left hand	No
LaWain C. Peterson	20	7/16/47	No	"	Kappleman	Axe cut on left foot	1 day
Don Kirkpatrick	18	7/19/47	No	"	Robinson		
Gerald Wamsley	18	5/31/47	No	"		SPrained palm of left hand while using axe	No
Dean C. Ivie	18	5/30/47	No	"	Sutton	Walking along tree, slipped axe cut leg	No
Clarence Gisse	32	6/3/47	No	"	Carlow	Saw slipped, cut right thumb	No
Wallace Deardon	37	5/21/47	No	"		Strained back tipping barrel of ortho	No

PICTURE SECTION

No. 1 - A typical Mexican crew with their foreman, Elmer Jones from the Payette. This size crew was unwieldly and a big job for the foreman. He soon had his strawbosses selected and created order out of chaos.

No. 2 - Bob Newcomer points to some of the "asule marino" blue stain which was the guide we trained the Mexicans to use in severing infested portions of the tree. However, when the Ips carried blue stain began to develop, this guide could no longer be used and they were retrained to recognize the difference between secondary and primary beetle attacks.



No. 3 - Some decking and burning was done until the oil applicators arrived on the job. This is the ideal way to burn infested logs.

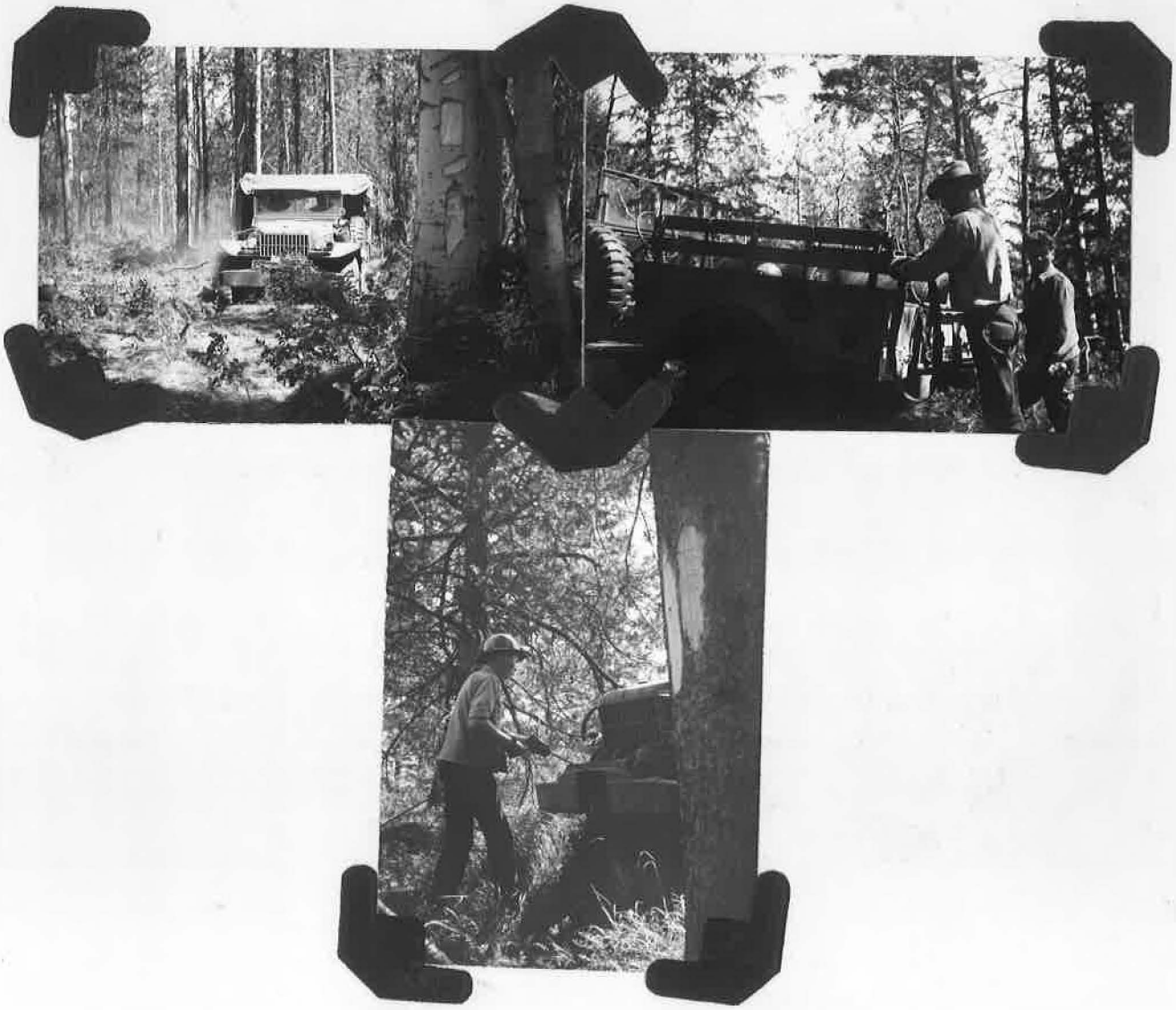
No. 4 - The four-man spotting crew which served the Fall Creek Camp. These men, including the compass man, were trained from the bottom up and were the prize spotting crew on the project. Included are the Chief spotter, the compass man, and two spotters. They travel in "V" formation, the chief spotter behind forming the "V".

No. 5 - The compass man runs the centerline and maps and records the trees. The two wingmen do the spotting and marking, and the chief spotter checks their work. He helps them mark when groups of trees are located.

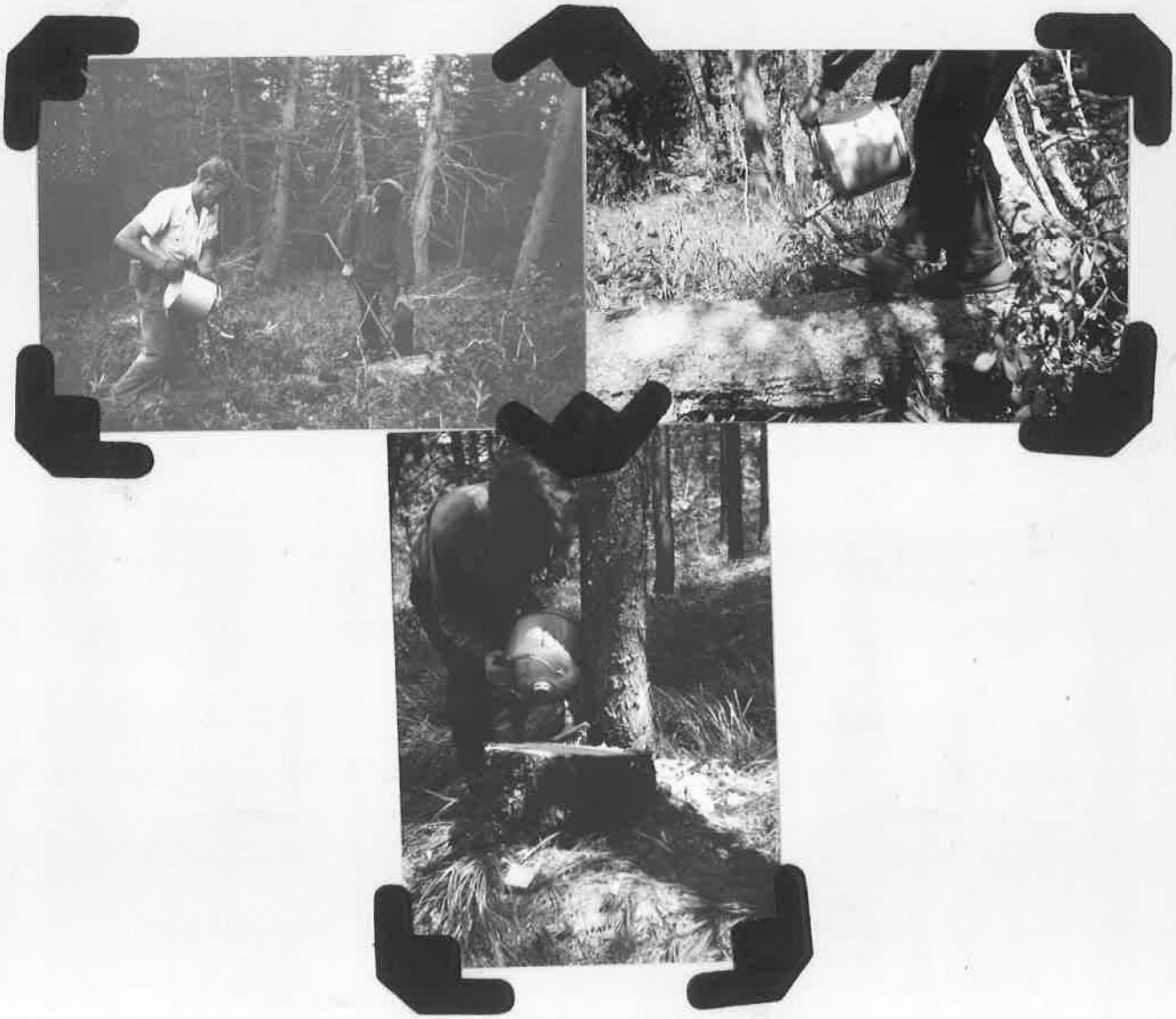
No. 6 - Some peeling was done. This is effective control while the beetles are in the larvae and pupae stages. The Mexicans were better peelers than they were burners. They averaged two trees per man-day while peeling which is an excellent average for this kind of control work.

No. 7 - The Fall Creek and Mosquito Creek Camps. The camps were well constructed and well run. These were the highest-type camps ever installed for insect control work in Region 4.

No. 8 - A good percentage of the infested trees on the Snake River bottoms was outsize and required much more than the ordinary amount of time and effort to treat. Trees of this kind greatly reduced the average tree per man-day for the crews on the bottomlands.



No. 9 - Jeeps were invaluable for transporting crews into the treating areas and hauling oil. They also saved many man-days of work by jerking down lodged trees with their winching apparatus. These remarkable carriers negotiated unbelievable grades and were operable on any kind of road which would take their "oversize" width. They paid their way many times over.



No. 10 - The can, finally decided upon to be the best for applying mix to the infested trees and stumps, was a two-gallon oil container with specially mounted nozzle. While one row of openings did the job, two rows were decided as the best and most effective. The job averaged about 1.5 gallons of mix per tree.

No. 11 - Dobbin still has her place in insect control work. Teams and skid boats built of round timbers took oil where the jeeps and trucks could not go.

No. 12 - "Red Tape" brings its headaches into the woods. The daily time slip signing and other highly involved methods of keeping books on the Mexicans are things we could get along nicely without. Forest Service time slips would give all the information required and do not require these "queues".

No. 13 - This is most of the Mexican camp crew with some of the foreman detached from forests. Among the Mexicans, we found many skills represented - from shoemakers and barbers to first-class mechanics. One was the best truck driver I have ever seen, yet we would allow no operating of any kind by them. There were sufficient brains and skill to have run the entire outfit, but could make no assignments other than labor. We lost production and good will by not being able to employ these men in the more skilled capacities.

Safety Plan for Bug Jobs

Organization

Work

Wind Up

ORGANIZATION

A. Transportation

1. Hauling
   - a. Check truck thoroughly
   - b. Driving shift

Proj. Supt.
   - c. Handling to load
     - (1) Use gloves
   - d. Overloading
   - e. Unloading
   - f. Stacking
   - g. Lifting hazards

2. Hauling men
   - a. Truck drivers

Proj. Supt.
     - (1) Safety drivers Test
     - (2) Driving Test
   - b. Loading - Stake Truck - 1.5 tons
     - (1) Box seats
     - (2) Steps into truck - or (end gate) w/hooks

Driver
     - (3) Be sure end gates are fastened and men ready.
     - (4) How Many - (25)
     - (5) Two in front seat
   - c. Transporting

Driver or Foreman
     - (1) Safe driving
     - (2) Horsing - prohibit keep seated
     - (3) Unloading carefully one at a time

3. Supervisory Transportation

All Supervisory
   - a. Set proper example to other drivers.
   - b. Report or take action on driving violations.

4. Hauling inflammables -(Ortho-Destillate-Gasoline)
   - a. Separate from other materials
   - b. Have company or dealer haul where possible

Proj. Supt.
   - c. Tight containers
   - d. Equipped with fire extinguishers that will work. Have extinguishers where they can be picked up.

B. Construction

1. Building Tent Frames
   a. Standing on sawhorses. Build solid platform.
   b. Safe use of hand tools.
   c. First-aid kit - depends on size of crew. Splinters. Immediate care of any injury.
   d. Know how to hold nails. How to start and guide saw.
   e. American and Mexican labor.
   f. Climbing on frame - ladder suggested.
   g. Stepping on nails.
   h. Housekeeping.

2. Loading and unloading docks.
   a. Proper height for various trucks.

3. Tool racks

4. Saw filing and tool fitting stands - safe and substantial construction. Grinding stand.

5. Make all installations safe, sturdy construction.

6. Maintain R-4 sanitation standards.

7. Necessary safety training on each specific job.

WORK

A. Training
1. Spotted Fever control without innoculation.
2. Drinking water - get it tested.
3. Personal hygiene and camp sanitation.
4. Swimming. Do not swim alone.
5. Poison Ivy and snakes.
6. Report to foreman for F.A. and report all injuries, broken skin or illness.

B. Cook Tent
1. Stove installation with spark arrester - inverted cone type in second joint of pipe.
2. Fasten joints and wire pipe to prevent falling over.
3. Insulation check
4. Safe fire building. No oil. Use oil treated sawdust.
5. Fire extinguishers (5 lb. size) well placed
6. Safety equipment
   a. Meat block
   b. Knife racks
   c. Good housekeeping
   d. Good can openers, shelving, knife sharpeners.
7. Sanitation equipment
   a. DDT - handle properly
   b. Keep towels, dishcloths, drain pans, sterile
   c. Clean cooks
   d. Clean utensils - try Army system no dish towels.

e. Cool proper storage for meat and other perishables
f. Proper garbage disposal facilities (Sec. 30, Safety Rules). Germicide (Good) Chloride of lime.
g. Plenty of hot water

8. Latrine - Sec. 30, Safety Rules.

C. Bunk houses
1. Safe stoves w/spark arresters. (Inspect arresters once a week)
2. Guard rail dual purpose
3. Safe woodbox - wood only
4. Small bulletin board
5. Good housekeeping
6. Two Indian fire pumps
7. Two dry powder extinguishers for gasoline lamp fires
8. Tents spaced 10' at least.

D. Service area
1. Tool tents - tool man
2. Gas dispenser
a. Pumps
b. "No Smoking" sign
c. Keep men out
3. Truck storage
a. Line up

E. First Aid
1. Each foreman of 30 men will have F.A. facilities.

Time-keeper

F. Accident Reports
1. Maintain camp accident record for Mexican Nationals
2. Ca 1 and 2 for accidents

G. Recreation Area
1. Safe recreation area

H. No guns or other lethal weapons. Check in to camp superintendent

I. No liquor in camp.

J. Treating
1. Transportation
a. Trucks
b. Weapon Carriers
c. Jeeps
d. Pickups

Camp Supt. and Driver

e. Safe reasonable loads. Boxes for tools - fastened
f. Keep good spacing between vehicles on road.
g. Comply with statements under organization - trans.
h. Be able to stop within 1/2 visible distance at all times.
i. No smoking on truck

2. Falling trees - Foreman

a. Four step training

(1) Tell them how

(2) Show them

Foreman (3) Have them do it with help

(4) Continued close check

In above training use section 19 for use of hand tools and section 36 for timber falling. Equip fallers with sombrero durros (Hard hats).

3. Bucking trees - Four step training

a. Strawboss

(1) Watch for rolling logs

(2) Lift properly to prevent binding

(3) Cutting off supporting limb and letting

Foreman log fall

(4) Lumbering on same side

(5) Clear place to swing axe

(6) Glancing axe

4. Making Decks - Four step training

a. Hooking horse on logs

Foreman b. Watch what teamster is doing. Stay at safe distance

c. Lift with legs instead of back

d. Timber hook and peavies with care

5. Treat with oil

a. Packer - Section 25 of safety rules

b. Handling oil

(1) Care to prevent burns on packer and horses.

c. Men handling oil

(1) Care to prevent spilling on clothes and skin.

(2) If spilled, wash thoroughly and apply tannic acid paste or whatever burn remedy is available

(3) Keep fire away from oil soaked clothes - care with matches and cigarettes.

(4) Watch footing when carrying oil - use rubber overshoes.

6. First Aid

a. A pocket kit for each 5-man crew

b. Strawboss carry and keep filled

7. Mixing oil

a. Proper mixing facilities - 50 gal. drum or tank for mixing

b. Precautions against excessive spilling by use of funnels and nozzle cans

c. No smoking in mixing area

d. Avoid getting oil on clothes or person

Tool man 8. Use and care of tools used on Job (Sec 19 & 32, S.R.)

a. Firm support

b. Good light

c. Guards on sharpening tools

d. Good housekeeping

e. Goggles for use with grinder.

K. Road Pioneering

Proj. Supt.

1. Guard (overhead) on cat
2. Hard hat for driver. (See Sections 34 & 36, Safety Rules)
3. Watch for hands in cables and moving parts

L. Spotting

Chief Spotter

1. Glancing axe when blazing trees
2. Running branches in eyes when going through bushes
3. Insecure footing
4. Proper foot wear
5. F. A. kits

M. Clothes and General Welfare on the Job

1. Proper shoes for job, if possible
2. Change clothes when have been working with oil
3. Salt Dextross combination recommended in case of excessive heat.

Breather - one in morning and one in afternoon
10:00 a.m. - 3:00 p.m.

WIND UP

Transportation:

1. Avoid overloading.
2. Adhere to transportation organization rules
3. Load, transport, unload with care.

Camp set up

1. Clean up and leave clean and sanitary
2. Safe storage and housekeeping for equipment and tools.